

# ENERGY 2 LEARN



*“Energy 2 Learn” is a cooperative education partnership developed and provided by the S.C. Energy Office and DHEC’s Office of Solid Waste Reduction and Recycling.*

**COMPREHENSIVE ENERGY EDUCATION PROGRAM**





***A comprehensive energy education program  
for South Carolina's students and teachers***

**“Energy 2 Learn”** includes classroom lessons, an awards program and other materials including **“The Energy Factbook: A Resource for South Carolina”** and **“The Science Fair Project Guidebook: A Resource for Students and Parents.”**

All program materials are available at no cost to teachers, schools or students. Teachers are welcomed and encouraged to use any or all of the programs offered. **“Energy 2 Learn”** offers balanced, objective and multi-sided information and materials, providing South Carolina’s teachers and students with one of the nation’s top energy education programs. Please read the synopsis of each of the following programs offered. If you have any questions, call DHEC’s Office of Solid Waste Reduction and Recycling at **1-800-768-7348** or visit our web site at **[www.state.sc.us/dhec/eqc/lwm/recycle/html/recycle1.htm](http://www.state.sc.us/dhec/eqc/lwm/recycle/html/recycle1.htm)** for more information.

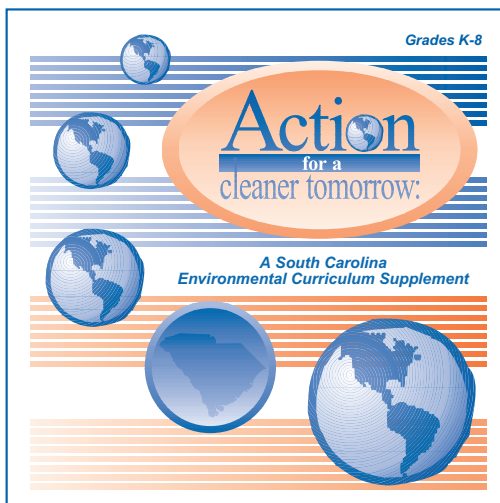
### ***Table of Contents***

“Action for a cleaner tomorrow: A South Carolina Environmental Curriculum Supplement” .....	Page 5
Champions and Grants .....	Page 8
Palmetto Energy Awards Program (PEAP) .....	Page 9
Palmetto Energy Awards Program Criteria .....	Page 10
National Energy Education Development Project (NEED) .....	Page 14

**“Energy 2 Learn”** is provided by a cooperative education partnership between the S.C. Energy Office and the S.C. Department of Health and Environmental Control’s Office of Solid Waste Reduction and Recycling.

**“Energy 2 Learn”** is composed of:

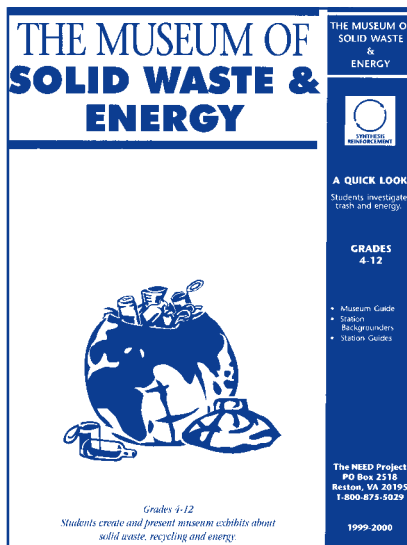
- ⚡ **“Action for a cleaner tomorrow: A South Carolina Environmental Curriculum Supplement:”** This kindergarten through 12th grade curriculum supplement includes 10 energy lessons that provide not only a global and national perspective on energy but South Carolina-specific information as well. Teachers can receive a copy or CD-ROM of “Action” following a mandatory three-hour workshop. Both the curriculum and workshop are provided at no cost. See page 5 for more information on “Action.”



- ⚡ **Palmetto Energy Awards Program:** The Palmetto Energy Awards Program, PEAP, is a special program for K-6 students, designed to help them learn about energy and how it affects their everyday lives. By completing teacher-approved projects on energy conservation and energy sources, students will earn points toward achieving different awards. The program can be done in individual classrooms or the entire school. See page 9 for more information about this program.
- ⚡ **South Carolina/National Energy Education Development Project:** The National Energy Education Development Project, NEED, is a nationally recognized energy education program dedicated to developing innovative educational materials and

training programs for teachers and students. NEED is now part of South Carolina's "Energy 2 Learn" program. To learn more about S.C. NEED and how you and your school can get involved, see page 14.

✚ **"Energy 2 Learn" - The Summer Workshop:** Every summer a statewide workshop is offered to teachers or educators to provide the latest information on energy and other environmental issues, including air, recycling and water. Admission is free, but spaces are limited. Participants receive a copy of **"Action for a cleaner tomorrow"** and other classroom materials, promotional items and fabulous door prizes. Sponsors include the S.C. Energy Office, DHEC's Office of Solid Waste Reduction and Recycling and the U.S. Postal Service (Columbia Cluster).



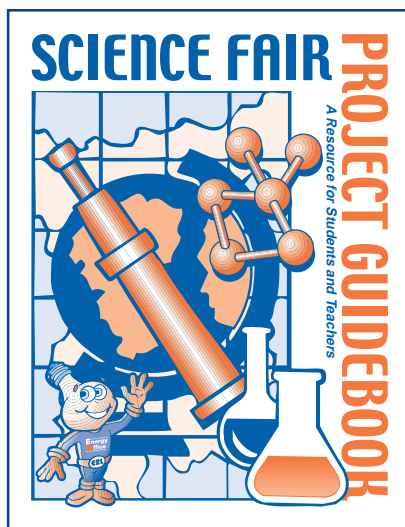
✚ **NEED Workshop:** This national workshop is offered to teachers each summer by the National Energy Education Development Project, NEED. The workshop offers hands-on experiments, discussions and information on the impact of energy resources on the environment. All information is presented in a concise, entertaining format. Call **1-800-851-8899** for registration information.

Other **"Energy 2 Learn"** projects and materials include:

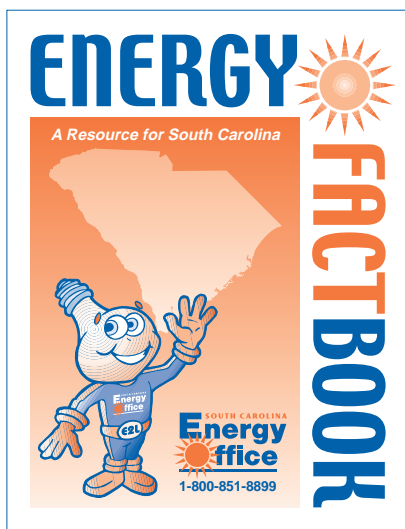
✚ **"The Science Fair Project Guidebook: A Resource for Students and Parents:"** This hands-on guidebook is available at no cost. It covers the basics, from how to choose a science fair topic to the final exhibit. How much - or how little - should parents help? Where can you find supplies for the project? Just what is a hypothesis? These and other questions are answered. The guidebook, which is applicable for students

and parents of all ages, also contains 10 science fair project ideas on energy. Call the S.C. Energy Office at **1-800-851-8899** for more information.

- ⚡ **“Energy 2 Learn Science Fair Project Awards:”** These awards will be given to the top school science fair projects relating to energy in the state’s seven regions. Call **1-800-851-8899** for more information.



- ⚡ **“The Energy Factbook: A Resource for South Carolina:”** The Factbook is available at no cost to teachers and students. The book provides an overview of energy with chapters on energy basics, fossil fuels, nuclear energy, electricity and solar energy, along with energy conservation and efficiency. In addition, web sites of interest are included. Call **1-800-851-8899** for more information.



- ⚡ **“Energy 2 Learn Teacher of the Year:”** This award will be presented every May. The winner will receive an “Energy 2 Learn” certificate of appreciation, recognition at “Energy 2 Learn: The Summer Workshop,” a \$500 gift certificate for classroom supplies, and a NEED membership. Teachers can be nominated by their peers, principal, parents of students or students. Send your nominations to DHEC’s Office of Solid Waste Reduction and Recycling, 2600 Bull Street, Columbia, SC 29201.

# Action for a cleaner tomorrow:

## *A South Carolina Environmental Curriculum Supplement*

“**Action for a cleaner tomorrow**” is an activity-based, interdisciplinary curriculum supplement that can serve as a starting place for incorporating basic environmental education in the classroom. Whether you are teaching students about recycling, energy conservation, water quality or air quality in South Carolina, these lessons are hands-on activities that help students get the facts ... think for themselves ... form opinions ... make decisions ... and take **Action for a cleaner tomorrow!**

### *Lesson Highlights*

*Below are descriptions of lessons from each of the four main subject areas of “**Action:**” air, energy, solid waste and water.*

- ✧ **AIR:** Become more air aware! “**Action**” contains lessons dealing with today’s most important air quality issues. “*The Ozone or No Zone*” and “*Living in the Greenhouse*” lessons teach students the difference between “good” and “bad” ozone. Students increase their knowledge of how weather patterns influence air quality with “*Today’s Forecast.*” Or, come inside with “*The Air in Here*” and bring to light indoor air quality issues. These fun and informative lessons will get students interested in learning more about what they can do for cleaner air.
- ✧ **ENERGY:** Students can learn all about energy and how important it is in “*Living Without Power*” and “*Conserving Energy.*” Want a little geography mixed with energy? Students can learn where South Carolina gets its energy in “*Power to Do Things.*”

It's time for a science experiment with *"Energy From the Sun."* Students learn how to measure solar heat and figure out ways this energy might be used to reduce our dependence on traditional fossil fuels and nuclear power.

- ✚ **SOLID WASTE:** These lessons will help your students learn how much garbage we make and ways to manage it, including recycling, waste reduction, buying recycled and composting. *"Plastics by the Number"* will help students recognize the role of plastics in our society, understand the plastics coding system and learn about surprising products made from recycled plastics. *"Musical Resources"* will help your students learn about natural resources and how they are used in the things we buy and use each day.

Take a different look at the past in *"The History of Garbage."* Students see what happens when they throw things away in *"A Trip to the Landfill."* Do you own a bike? Did you know hazardous materials were made during the bike's construction? Students will understand that everyone is responsible for making waste in *"Bikes and By-Products."*

- ✚ **WATER:** *"Runaway With Runoff"* helps your students understand how everyday activities on land can affect our water quality. By using the lessons *"We All Live Downstream"* and *"Runaway Water,"* your class will learn through hands-on activities about runoff pollution, watersheds and land use.

Read up on geography and learn about drinking water sources with *"South Carolina's Bodies of Water."* Bring the water cycle to life with *"The Water Cycle"* and *"The Mini Water Cycle,"* and add to students' knowledge about states of matter with *"Evaporation."* All of these lessons use simple materials to **have fun** while practicing important science concepts!

**"Action"** is designed to give students the knowledge, information and skills to make responsible decisions on environmental issues."

- **Lorraine Conrad**, Science Coordinator,  
Richland School District 2



## Training and Resources

The S.C. Department of Health and Environmental Control's Office of Solid Waste Reduction and Recycling manages "**Action for a cleaner tomorrow**" and "**Action**" workshops. In a three-hour session, you'll see how the curriculum supplement works. Each teacher completing the workshop receives a copy of the curriculum (either K-8 or 6-12) in a three-ring binder or on CD-ROM. "**Action**" and "**Action**" workshops are provided by DHEC at no cost to schools or teachers.

The Office also has a **Resource Center** with a variety of materials that can be used to supplement the solid waste lessons in "**Action**," including videos, posters, activity books and other information. You can reach the Resource Center toll-free at **1-800-768-7348** or visit our web site at [www.state.sc.us/dhec/eqc/lwm/recycle/html/recycle1.htm](http://www.state.sc.us/dhec/eqc/lwm/recycle/html/recycle1.htm).

To reserve the Resource Center for a field trip, call DHEC's Office of Solid Waste Reduction and Recycling at **1-800-768-7348**.

## You Should Know...

- ✧ "**Action**" was developed by South Carolina teachers.
- ✧ More than 10,000 teachers have attended "**Action**" workshops.
- ✧ A statewide survey was conducted by *MarketSearch Corporation* to measure perceptions and attitudes of teachers using "**Action**." The survey, which also included four focus groups of teachers showed:
  - 97 percent of teachers said they had positive experiences with "**Action**," and 61 percent of teachers said it was very positive.
  - Nearly 100 percent of respondents said they would recommend "**Action**" to other teachers, including 71 percent who said they would strongly recommend it.

# Champions and Grants

## *Become a Champion!*

By building upon the lessons taught in “**Action**,” students can take action to protect and promote their environment. Student efforts could earn them recognition as a **Champion of the Environment**. **Champions** is a program that recognizes and rewards South Carolina students for their outstanding environmental achievements. For more information, call **(803) 898-4394**.

## *Grants*

DHEC’s Office of Solid Waste Reduction and Recycling offers Solid Waste Environmental Education Grants. This competitive program allocates funds to public schools and school districts as well as private schools. For more information and an application, call **1-800-768-7348**.

# The Palmetto Energy Awards Program

**The Palmetto Energy Awards Program** is a special program for students (K-6) who want to learn about energy and how it affects their everyday lives and their futures. By completing projects on energy conservation and energy sources, students will earn points toward achieving the different awards.

## *How do I earn the Palmetto Energy Awards?*

Students must complete projects to earn points.

Each project must be selected from a different subject category. Projects listed in each category on pages 10 through 12 are only examples. Any teacher-approved project will qualify a student to participate in the awards program.

Students have six categories from which to choose: Art/Home Economics/Shop, English/Language Arts, Library/Home Study, Miscellaneous, Science/Mathematics or Social Studies/History.

Each project must be approved by a teacher who agrees to grade the project when completed. Teachers should use this scoring system: **A=4, B=3, C=2, D=1**.

Students earning 9 to 12 points will receive an energy bookmark. Students earning 13 to 17 points will receive the bookmark and a certificate of recognition. Students earning 18 points or more will receive the bookmark, certificate and an "Energy 2 Learn" T-shirt. In addition, middle school students are eligible to win a \$500 savings bond. There is one middle school winner every year. Please call DHEC's Office of Solid Waste Reduction and Recycling at **1-800-768-7348** for more information.

# The Palmetto Energy Awards Program Criteria

## *Art/Home Economics/Shop*

Choose one from below or complete a teacher-approved project (maximum points: four).

- ✎ Design a poster promoting energy conservation or the use of a renewable energy source.
- ✎ Design and draw plans for a solar building (house, barn, school, greenhouse, etc.).
- ✎ Design and make an insulated window covering.
- ✎ Produce a display or bulletin board showing how to conserve energy in your home or school.
- ✎ Conduct an energy inventory of your household appliances and automobiles. How much energy do they use annually and how much does it cost?
- ✎ Build a model of a solar building.
- ✎ Build a solar hot dog cooker.

## *English/Language Arts*

Choose one from below or complete a teacher-approved project (maximum points: four).

- ✎ Write an essay on energy use in your school, home or community.
- ✎ Write a research paper, with footnotes and a bibliography, on a form of energy.
- ✎ Write reports on five newspaper or magazine articles discussing energy topics in South Carolina.
- ✎ Write three poems or two stories in which energy is the main theme.
- ✎ Present a 5- to 10-minute speech to your class on how to reduce energy costs in your home.

### ***Library/Home Study***

Choose one from below or complete a teacher-approved project (maximum points: four).

- ✎ Do a book report on an energy subject.
- ✎ Compile a bibliography or reference list on three different energy topics using materials available in your school or local library.
- ✎ Watch three television programs or videos on energy and write reviews of them.
- ✎ Keep a diary of energy topics in the news (television or newspaper) for two weeks.
- ✎ Do an energy audit of your home. Indicate where and how energy is wasted or saved.
- ✎ Prepare a questionnaire and conduct a survey of your school or neighborhood to identify attitudes or practices regarding energy conservation.
- ✎ Compile a listing of 10 web sites on energy and briefly describe the contents of each site.

### ***Miscellaneous***

Choose one from below or complete a teacher-approved project (maximum points: four).

- ✎ Write a story for your school newspaper on an energy topic.
- ✎ Design an energy education game.
- ✎ Implement an energy conservation project in your school or club.
- ✎ Construct an energy crossword puzzle using at least 30 energy terms.
- ✎ Design a brochure to teach people how to conserve energy.
- ✎ Design a display showing the effects different sources of lighting (incandescent, fluorescent, candlelight, etc.) have on dark-colored walls.

Upon completion of the project(s), teachers should call DHEC's Office of Solid Waste Reduction and Recycling for an entry form(s). An entry form must be completed for each project. Complete and return the form(s) to DHEC's Office of Solid Waste Reduction and Recycling, 2600 Bull Street, Columbia, SC 29201.

## Science/Mathematics

Choose one from below or complete a teacher-approved project (maximum points: four).

- ✎ Write a report on producing power from a renewable source (sun, wind, water, wood, garbage, farm crops, etc.).
- ✎ Design and demonstrate to your science class two experiments on energy.
- ✎ Prepare three graphs on energy topics, such as energy production or consumption in South Carolina, U.S. dependence on oil imports or gasoline usage in different countries.
- ✎ Write a simple explanation of a utility bill. Explain the units of measurement and how the bill is computed.
- ✎ Determine how much energy (measured in BTUs) is used annually in your school. How does energy use per student compare with your energy use at home per family member?
- ✎ Prepare a chart illustrating units of energy measurement and conservation formulas.

## Social Studies/History

Choose one from below or complete a teacher-approved project (maximum points: four).

- ✎ Write a biography on a person who has made a contribution in the field of energy.
- ✎ Do a report on the advantages and disadvantages of an energy source (e.g., coal, nuclear, solar, etc.).
- ✎ Do a report on the environmental impact of energy use or production.
- ✎ Write a report or give a speech on energy use in the United States during the past 100 years.
- ✎ Do a survey of fellow students' attitudes on conserving energy. Summarize the results.
- ✎ Write a report contrasting the energy policies of Presidents Carter, Reagan, Bush and Clinton.
- ✎ Draw maps illustrating state, U.S. and world energy resources.
- ✎ Present a report comparing energy used in your life-style with energy used in another country or culture.
- ✎ Write a report on the likelihood of a future energy crisis or shortage and what we should do to prevent a shortage.

## Resources

Students should consider these information sources when preparing their projects. When asking for information, be specific. In addition, students should give their name, school address and grade.

- ⚡ S.C. Energy Office, **1-800-851-8899** or **(803) 737-8030**;
- ⚡ DHEC's Office of Solid Waste Reduction and Recycling, **1-800-768-7348**;
- ⚡ Your school or community library;
- ⚡ Your local gas or electric company;
- ⚡ Your local Clemson Extension Service;
- ⚡ DHEC's "Action for a cleaner tomorrow: A South Carolina Environmental Curriculum Supplement;"
- ⚡ The S.C. Energy Office's "Energy Fact Book: A Resource for South Carolina," and "The Science Fair Project Guidebook: A Resource for Students and Parents."

Students can also check out these web sites:

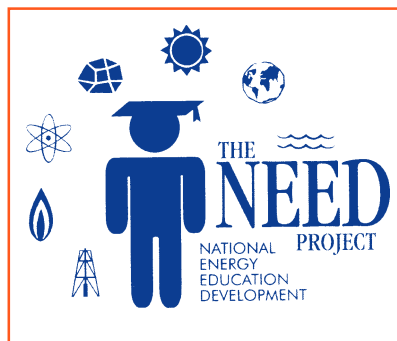
- ⚡ S.C. Energy Office at **[www.state.sc.us/energy](http://www.state.sc.us/energy)**;
- ⚡ DHEC's Office of Solid Waste Reduction and Recycling at **[www.state.sc.us/dhec/eqc/lwm/recycle/html/recycle1.htm](http://www.state.sc.us/dhec/eqc/lwm/recycle/html/recycle1.htm)**;
- ⚡ The California Energy Commission at **[www.energy.ca.gov/education](http://www.energy.ca.gov/education)**;
- ⚡ The Department of Energy's Education Community at **[www.sandia.gov/ESTEEM.home.html](http://www.sandia.gov/ESTEEM.home.html)**;
- ⚡ The Energy Center of Wisconsin at **[www.energyped.ecw.org/index.html](http://www.energyped.ecw.org/index.html)**;
- ⚡ The Energy Efficiency and Renewable Energy Network (EREN) at **[www.eren.doe.gov/kids.html](http://www.eren.doe.gov/kids.html)**; and
- ⚡ The U.S. Environmental Protection Agency at **[www.epa.gov/kids.html](http://www.epa.gov/kids.html)**.

# NEED

## *National Energy Education Project*

The mission of the National Energy Education Development Project, NEED, is to promote an energy conscious and educated society by creating networks of students and teachers as well as business, government and community leaders to provide objective, multi-sided energy education programs. Established

by Presidential Proclamation in 1980, NEED is now in more than 5,000 schools in 35 states. NEED officially became part of South Carolina's "Energy 2 Learn" energy education program in 1999 when S.C. NEED was introduced at the annual "Energy 2 Learn" teacher workshop in Columbia.



The NEED Program includes educational materials, teacher and student training, evaluation and recognition. NEED materials and training programs are designed to provide comprehensive, objective information on the scientific concepts of energy and on the major energy sources - how they are used and their impact on the environment, economy and society. The program emphasizes the development of critical thinking and problem solving using hands-on activities that encourage students to consider trade-offs inherent in energy use.

NEED's materials have been designed to meet the needs of teachers and students, using the National Science Education Standards as well as many state science and environmental programs. Activities are available at all grade levels - from kindergarten through 12th grade - and incorporate NEED's "Kids Teaching Kids" approach by encouraging students to teach others.

NEED encourages student leadership by sponsoring a Youth Awards Program for Energy Achievement. Student and teacher



achievements are recognized by statewide awards programs and National Recognition Ceremonies in Washington, D.C.

⚡ **NEED's Energy Kit:**

- Energy InfoBooks - Secondary, Intermediate and Primary
- NEED's Blueprint for Success Program Guide
- Energy Games and Icebreakers
- Energy Projects and Activities
- Youth Awards Guide for Energy Achievement

- ⚡ Free materials to customize a grade appropriate program
- ⚡ Subscription to "Energy Exchange" magazine
- ⚡ Entrance into NEED's Youth Awards Program
- ⚡ Opportunity to attend NEED workshops and training conferences

The S.C. Energy Office will award a limited number of scholarships each year that will provide a teacher or school with a free membership to NEED or provide a teacher with funding to attend a national NEED workshop or training conference. Call **1-800-768-7348** for more information on either scholarship.

## ***NEED Membership***

- ⚡ **How do I Join?** Schools can join the NEED project for a \$35 annual fee. In many areas this fee is subsidized by local corporate sponsors. Contact NEED to see if your school is eligible for sponsorship.
- ⚡ **The Kit:** NEED members receive an Energy Kit each year. The kit contains everything you need to have a successful NEED Program. Some of the contents include the NEED Energy InfoBooks at three reading levels. This is a comprehensive, information-packed program to teach the Science of Energy, the sources of energy, electricity and transportation, conservation and efficiency. NEED activities also encourage student leadership.
- ⚡ **The Magazine:** *Energy Exchange* keeps you informed about energy topics and energy issues. It provides up-to-date

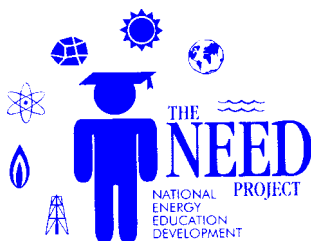
program ideas, highlights unique and successful energy programs, and also helps readers stay in touch with their companions in the NEED Network.

- ⚡ **The Awards:** School NEED committees and student groups within NEED schools are eligible for the NEED Youth Awards for Energy Achievement. Students compete on different age levels in both statewide and national divisions. National winners receive an invitation to attend the Youth Awards Program held in Washington each June. Guidelines for the awards program are in the 2000 Energy Kit.
- ⚡ **Training:** NEED provides training through national conferences and regional workshops. Two national conferences are held each year. S.C. NEED will be part of the national conference, in addition to a statewide training at “Energy 2 Learn: The Summer Workshop.” Call **1-800-851-8899** for more information.
- ⚡ **Workshops:** Member schools may participate in day-long workshops held at host schools or corporate sites. Students and teachers are exposed to a variety of NEED activities and games. The focus is to help students and teachers return to their own school with the motivation and tools to accomplish outstanding energy education activities.

**NEED programs and teacher trainings are designed to help educators meet the requirements of national, state and local education standards. All NEED programs and activities are correlated to the National Standards for Science Education.**



# COMPREHENSIVE ENERGY EDUCATION PROGRAM



*Printed on 20 percent post-consumer  
recycled content paper*  
OR-0121 3/00